

14 44. (Thrice Amended) A method of improving gas exchange in the lungs of a mammal, said method comprising identifying a mammal in need of said improved gas exchange, and providing a therapeutically-effective amount of a nitric oxide-releasing compound to such a mammal for inhalation.

15 45. (Amended) The method of claim 44, wherein said nitric oxide-releasing compound is provided for inhalation [inhaled] in a gas comprising at least 1 ppm gaseous nitric oxide.

17 47. (Thrice Amended) A method of delivering a pharmacoactive compound into the lungs of a mammal, said method comprising providing said compound in the form of a liquid or solid suspended in a gas comprising a therapeutically-effective amount of nitric oxide to a mammal for inhalation, wherein the gas comprises less than 12 ppm NO₂ when provided to the mammal for inhalation.

24 54. (Amended) An inhaler device comprising a vessel containing pressurized gas comprising at least 1 ppm nitric oxide;

a housing defining a lumen, said vessel being attached to said housing to deliver said gas into said lumen; and

a mechanism for controllably releasing said gas from said vessel into said lumen; said lumen being configured to route said released gas into the respiratory system of a person, [and said device weighing] at which point said released gas contains less than 12 ppm NO₂; wherein said device weighs less than approximately 5 kg.

34 74. (Amended) The device of claim 73, wherein said propellant gas comprises nitric oxide gas.

36 76. An apparatus for introducing NO gas into the respiratory system of a mammal, comprising

a source of pressurized NO-containing gas;
a source of pressurized O₂-containing gas;
a gas blender;

means for controllably releasing said gases from said sources into said blender, thereby forming a gas mixture which continuously flows out of said blender; [and]

a tube having a lumen in communication with said blender, said tube being configured to route said gas mixture into the respiratory system of a mammal; and

a nitrogen dioxide (NO₂) scavenger.

42 23. (Amended) An apparatus for introducing NO gas into the respiratory system of a mammal, comprising

sources of pressurized NO gas, N₂ gas and O₂ gas;
a gas reservoir;

means for controllably releasing said gases into said gas reservoir, thereby forming a gas mixture within said reservoir; and

a tube having a lumen in communication with said reservoir, said tube being equipped with a flowmeter, wherein said tube is configured to route said gas mixture into the respiratory system of a mammal;

means, including a setting on said flowmeter, for ensuring that the residence half time of NO in said reservoir during use by such a mammal is 15 seconds or less.

[provided that the setting on said flowmeter is such that the residence half time of NO in said reservoir during use by such a mammal is 15 seconds or less].

46 27. (Twice Amended) An apparatus for introducing NO gas into the respiratory system of a patient, comprising:

a source of pressurized NO gas;
an NO₂ scavenger;

an enclosure suitable for providing an ambient atmosphere from which a patient can inhale;

D10 means for charging said atmosphere with NO from said source; and

means for causing said atmosphere to have a high gas turnover rate.

51 92. An apparatus for introducing NO gas into the respiratory system of a patient, comprising:

a source of pressurized NO gas;

D11 a ventilator comprising a ventilation circuit, said ventilation circuit comprising an NO₂ scavenger; and

means for controllably releasing said gas into said ventilation circuit.

55 97. (Twice Amended) An apparatus for introducing NO gas into the respiratory system of a mammal, comprising:

a source of pressurized NO gas;

a source of pressurized O₂-containing gas;

a housing equipped with a flowmeter; [and]

D12 an NO₂ scavenger; and

means for controllably releasing said gases from said sources into said housing to form a gas mixture; said housing being configured to route said gas mixture into the respiratory system of a mammal.

61 104. (Twice Amended) A method for treating or preventing reversible pulmonary vasoconstriction in a mammal, which method comprises

D13 providing for inhalation by a mammal in need of said treatment or prevention a therapeutically-effective amount of an oxygen-containing gas mixture comprising NO at a therapeutically-effective concentration and containing less than 12 ppm NO₂ when provided to the mammal for inhalation[, provided that the NO₂ concentration in said gas mixture at the point of inhalation is less than 12 ppm].

62 105. (Twice Amended) The method of claim ~~104~~⁶¹, wherein said gas mixture contains less than 1 ppm NO₂ when provided to [inhaled by] the mammal for inhalation.

63 106. (Amended) The method of claim ~~104~~⁶¹, wherein prior to said providing step, the oxygen-containing gas mixture's NO₂ concentration is monitored [comprising the additional step of monitoring the concentration of NO₂ in said gas mixture, prior to said inhalation step].

64 107. (Amended) The method of claim ~~104~~⁶¹, wherein prior to said providing step, the oxygen-containing gas mixture is passed [comprising the additional step of passing said gas mixture] through a NO₂ scavenger [prior to said inhalation step].

68 110. (Twice Amended) A method for treating or preventing reversible pulmonary vasoconstriction in a mammal, which method comprises
providing [for inhalation by a mammal in need of said treatment or prevention] a therapeutically-effective amount of an oxygen-containing gas mixture comprising NO at a therapeutically-effective concentration; [and]

monitoring [the concentration of NO₂ in said gas mixture prior to said inhalation] said gas mixture's NO₂ concentration; and

following said monitoring step, providing the gas mixture for inhalation by a mammal in need of said treatment or prevention.

69 111. (Twice Amended) The method of claim ~~110~~⁶⁸, wherein said gas mixture contains less than 1 ppm NO₂ when provided to [inhaled by] the mammal for inhalation.

70 112. (Amended) The method of claim ~~110~~⁶⁸, comprising the additional step of passing said gas mixture through a NO₂

D16 scavenger prior to providing said gas mixture to the mammal for inhalation [said inhalation step].

D17 117. (Amended) The method of claim ~~115~~¹¹⁴, comprising the additional step of monitoring the gas mixture's concentration of NO₂ [in said gas mixture], prior to said [inhalation] step of providing a therapeutically effective amount of said gas mixture for inhalation.

D18 120. (Twice Amended) A method for treating or preventing bronchoconstriction in a mammal, which method comprises

providing for inhalation by a mammal in need of said treatment or prevention a therapeutically effective amount of an oxygen-containing gas mixture comprising NO at a therapeutically-effective concentration and containing less than 12 ppm NO₂ when provided to the mammal for inhalation[, provided that the NO₂ concentration in said gas mixture at the point of inhalation is less than 12 ppm].

D19 122. (Amended) The method of claim ~~120~~⁸⁰, comprising the additional step of monitoring the concentration of NO₂ in said gas mixture, prior to [said inhalation step] providing said gas mixture for inhalation.

83 123. (Amended) The method of claim ~~120~~⁸⁰, comprising the additional step of passing said gas mixture through a NO₂ scavenger prior to [said inhalation step] providing said gas mixture for inhalation.

D20 124. (Twice Amended) A method for treating or preventing bronchoconstriction in a mammal, which method comprises

providing for inhalation by a mammal in need of said treatment or prevention a therapeutically-effective amount of an

oxygen-containing gas mixture comprising NO at a therapeutically-effective concentration; and

D20 ⁸⁶ prior to the providing step, monitoring [the concentration of NO₂ in said gas mixture prior to said inhalation] the gas mixture's NO₂ concentration.

⁸⁵ 125. (Twice Amended) The method of claim 124, wherein said gas mixture contains less than 1 ppm NO₂ when provided to [inhaled by] the mammal for inhalation.

D21 ⁸⁷ 126. (Amended) The method of claim ⁸⁵ 124, comprising the additional step of passing said gas mixture through a NO₂ scavenger prior to said providing [inhalation] step.

D22 ⁹⁰ 128. (Twice Amended) The method of claim ⁸⁹ 127, wherein said gas mixture contains less than 1 ppm NO₂ when provided to [inhaled by] the mammal for inhalation.

D23 ⁹¹ 129. (Amended) The method of claim ⁸⁹ 127, comprising the additional step of monitoring [the concentration of NO₂ in said gas mixture, prior to said inhalation step] the gas mixture's NO₂ concentration, prior to providing said gas mixture for inhalation.

[Add new claims 135-174.]

D24 ⁹² --135. An apparatus for introducing NO gas into the respiratory system of a mammal, comprising

- a source of pressurized NO-containing gas;
- a source of pressurized O₂-containing gas;
- a gas blender;
- means for controllably releasing said gases from said sources into said blender, thereby forming a gas mixture which continuously flows out of said blender;

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a tube having a lumen in communication with said blender, said tube being configured to route said gas mixture into the respiratory system of a mammal; and
an NO₂ analyzer.--

q3 --~~136~~. The apparatus of claim ^{q2}~~135~~, wherein said NO in said source of pressurized NO is diluted in an inert gas.--

q4 --~~137~~. The apparatus of claim ^{q2}~~135~~, wherein said inert gas is N₂.--

q5 --~~138~~. The apparatus of claim ^{q2}~~135~~, wherein said O₂-containing gas is 100% O₂.--

q6 --~~139~~. The apparatus of claim ^{q2}~~135~~, wherein said tube comprises a mask configured to route said gas mixture into the respiratory system of a mammal.--

q7 --~~140~~. An apparatus for introducing NO gas into the respiratory system of a patient, comprising:

a source of pressurized NO gas;

an NO₂ analyzer;

an enclosure suitable for providing an ambient atmosphere from which a patient can inhale;

means for charging said atmosphere with NO from said source; and

means for causing said atmosphere to have a high gas turnover rate.--

q8 --~~141~~. The apparatus of claim ^{q7}~~140~~, wherein said NO in said source of pressurized NO is diluted in an inert gas.--

q9 --~~142~~. The apparatus of claim ^{q8}~~141~~, wherein said inert gas is N₂.--

100 ~~143~~ 97. The apparatus of claim ~~140~~, wherein said enclosure is a mask.--

101 ~~144~~ 97. The apparatus of claim ~~140~~, wherein said enclosure is a tent.--

102 ~~145~~. An apparatus for introducing NO gas into the respiratory system of a patient, comprising:
a source of pressurized NO gas;
a ventilator comprising a ventilation circuit, said ventilation circuit comprising an NO₂ analyzer; and
means for controllably releasing said gas into said ventilation circuit.--

103 ~~146~~ 102. The apparatus of claim ~~145~~, wherein said NO in said source of pressurized NO is diluted in an inert gas.--

104 ~~147~~ 102. The apparatus of claim ~~145~~, wherein said inert gas is N₂.--

24 105 ~~148~~. An apparatus for introducing NO gas into the respiratory system of a mammal, comprising:
a source of pressurized NO gas;
a source of pressurized O₂-containing gas;
a housing equipped with a flowmeter;
an NO₂ analyzer; and
means for controllably releasing said gases from said sources into said housing to form a gas mixture;
said housing being configured to route said gas mixture into the respiratory system of a mammal.--

106 ~~149~~ 105. The apparatus of claim ~~148~~, wherein said NO in said source of pressurized NO is diluted in an inert gas.--

107 ~~150~~ 106. The apparatus of claim ~~149~~, wherein said inert gas is N₂.--

108 --151. The apparatus of claim 148, wherein said O₂-containing gas is 100% O₂.--

109 --152. The apparatus of claim 148, wherein said housing comprises a mask configured to route said gas mixture into the respiratory system of a mammal.---

110 --153. An apparatus for introducing NO gas into the respiratory system of a mammal, comprising
a source of pressurized NO-containing gas;
a source of pressurized O₂-containing gas;
a gas blender;
means for controllably releasing said gases from said sources into said blender, thereby forming a gas mixture which continuously flows out of said blender;
a tube having a lumen in communication with said blender, said tube being configured to route said gas mixture into the respiratory system of a mammal;
wherein said gas mixture contains less than 12 ppm NO₂ as it exits the apparatus.

D24 111 --154. The apparatus of claim 153, wherein said NO in said source of pressurized NO is diluted in an inert gas.--

112 --155. The apparatus of claim 154, wherein said inert gas is N₂.--

113 --156. The apparatus of claim 153, wherein said O₂-containing gas is 100% O₂.--

114 --157. The apparatus of claim 153, wherein said tube comprises a mask configured to route said gas mixture into the respiratory system of a mammal.---

115 --158. The apparatus of claim 153, wherein said gas mixture contains less than 1 ppm NO₂ as it exits the apparatus.--

116 --159. An apparatus for introducing NO gas into the respiratory system of a patient, comprising:

a source of pressurized NO gas;

an enclosure suitable for providing an ambient atmosphere from which a patient can inhale;

means for charging said atmosphere with NO from said source; and

means for causing said atmosphere to have a high gas turnover rate, wherein said atmosphere's NO₂ concentration does not exceed 12 ppm.--

117 --160. The apparatus of claim 159, wherein said NO in said source of pressurized NO is diluted in an inert gas.--

118 --161. The apparatus of claim 160, wherein said inert gas is N₂.--

119 --162. The apparatus of claim 159, wherein said enclosure is a mask.--

D24 120 --163. The apparatus of claim 159, wherein said enclosure is a tent.--

121 --164. The apparatus of claim 159, wherein said atmosphere's NO₂ concentration does not exceed 1 ppm.--

122 --165. An apparatus for introducing NO gas into the respiratory system of a patient, comprising:
a source of pressurized NO gas;
a ventilator comprising a ventilation circuit; and
means for controllably releasing said gas into said ventilation circuit, provided that following release of said gas into said ventilation circuit, said ventilation circuit contains less than 12 ppm NO₂.--

123 --166. The apparatus of claim 165, wherein said NO in said source of pressurized NO is diluted in an inert gas.--

124 --167. The apparatus of claim 166, wherein said inert gas is N₂.--

125 --168. The apparatus of claim 165, wherein following release of said gas into said ventilation circuit, said ventilation circuit contains less than 1 ppm NO₂.--

126 --169. An apparatus for introducing NO gas into the respiratory system of a mammal, comprising:
a source of pressurized NO gas;
a source of pressurized O₂-containing gas;
a housing equipped with a flowmeter; and
means for controllably releasing said gases from said sources into said housing to form a gas mixture;
said housing being configured to route said gas mixture into the respiratory system of a mammal, wherein said gas mixture contains less than 12 ppm NO₂ as it exits said apparatus.--

124 127 --170. The apparatus of claim 169, wherein said NO in said source of pressurized NO is diluted in an inert gas.--

128 --171. The apparatus of claim 170, wherein said inert gas is N₂.--

129 --172. The apparatus of claim 169, wherein said O₂-containing gas is 100% O₂.--

130 --173. The apparatus of claim 169, wherein said housing comprises a mask configured to route said gas mixture into the respiratory system of a mammal.--

131 --174. The apparatus of claim 169, wherein said gas mixture contains less than 1 ppm NO₂ as it exits said apparatus.--